**Supplementary material**

**Maternal depression symptoms are highly prevalent among Food insecure households of Ethiopia**

**Binary logistic model structure and description**

The binary logistic models were of the form:







Whereis the status of depression (depressed or not) of a mother *i* in a village *j,* is the probability of a mother *i* in a village *j* being depressed or not , is the intercept,  is a vector of explanatory variables multiplied by their coefficients,is a vector of explanatory variables at village level multiplied by their coefficients,is the error term (random effect)

We specified the model with non-informative prior for the intercept and the coefficients (mean equal to 0 and precision of 1x 106). Three chains of models with an initial of 10000 iterations were run. The values of the coefficient and intercept were stored and evaluated for convergence using diagnostic tests. We checked for convergence of parameters visually using history plot and kerenel density. Convergence was successfully achieved after 10,000 iterations. After convergence, a further 10,000 iterations were run and values were thinned by 10 and stored. The stored samples were used to calculate summary statistics (mean, SD, and 95% credible intervals) of the parameters.

Supplemental Table 1. shows results from a Bayesian logistic model and classic regression for the relationship between food security and maternal depression, 2014.

|  |  |  |
| --- | --- | --- |
| **Background characteristics** | **Depression** | |
| **Logistic regression (rare events )** | **Bayesian logistic regression model** |
| **Adjusted 95% CI** | **Adjusted 95% Bayesian credible intervals (BCI) OR (95% BCI)** |
| **Household Food security** |  |  |
| Food secure | 1.0 | 1.0 |
| Mild food insecure | **3.88[1.63,9.23]\*** | **3.29[1.63,6.18]\*** |
| Moderately food insecure | **4.32[1.84,10.15]\*** | **3.82[1.91,7.45]\*** |
| Severely food insecure | **16.53[4.87,56.1]\*** | **12.5[3.38,32.7]\*** |
| Household head |  |  |
| Male headed | 1.0 | 1.0 |
| Female headed | 1.44[0.64,3.22] | **1.85[1.02,3.01]\*** |
| **Household wealth** |  |  |
| Richest | 1.0 | 1.0 |
| Rich | 1.21[0.62,2.41] | 1.00[0.48,1.82] |
| Middle | 1.57[0.79,3.14] | 1.35[0.69,2.47] |
| Poor | **2.06[1.05,4.05]\*** | 1.87[0.95,3.63] |
| Poorest | **2.08[1.09,3.96]\*** | **1.85[1.00,3.24]\*** |
|  |  |  |
| Mother’s age (years)\*a | 1.03[0.9,1.06] | **1.03[1.00,1.06]\*** |
|  |  |  |
| Ethnicity |  |  |
| Guraghe | 1.0 | 1.0 |
| Silte | 0.95[0.35,2.57] | 0.98[0.57,1.53] |
| Mareko | 1.02[0.61,1.73] | 1.15[0.41,2.45] |
| Others | 1.97[0.87,4.46] | 1.97[0.82,3.81] |
| Husband’s Occupation |  |  |
| Farmer | 1.62[0.67,3.97] | 2.45[0.87,6.70] |
| Daily laborer | 1.28[0.35,4.70] | 1.79[0.29,5.72] |
| Employee/private/merchant | 1.0 | 1.0 |
| Religion |  |  |
| Orthodox Christian | **1.68[1.07,2.55]\*** | 1.54[0.72,3.43] |
| Muslim | 1.51[0.72,3.15] | 1.00[0.48,1.99] |
| Others | 1.0 | 1.0 |
|  |  |  |